(1) $SiO_2 + 2H_2O$ \rightleftharpoons $Si(OH)_4$ $Si(ONa)_4$ Alkali NaOH

(2) $Si(OH)_4 + OH \Rightarrow HSiO_3 + 2H_2O$

(3) $2HSiO_3 \rightleftharpoons SiO_2 + 2H_2O$

(4) $HSiO_3 + OH$ \rightleftharpoons $SiO_3 + H_2O$

Fig. 1

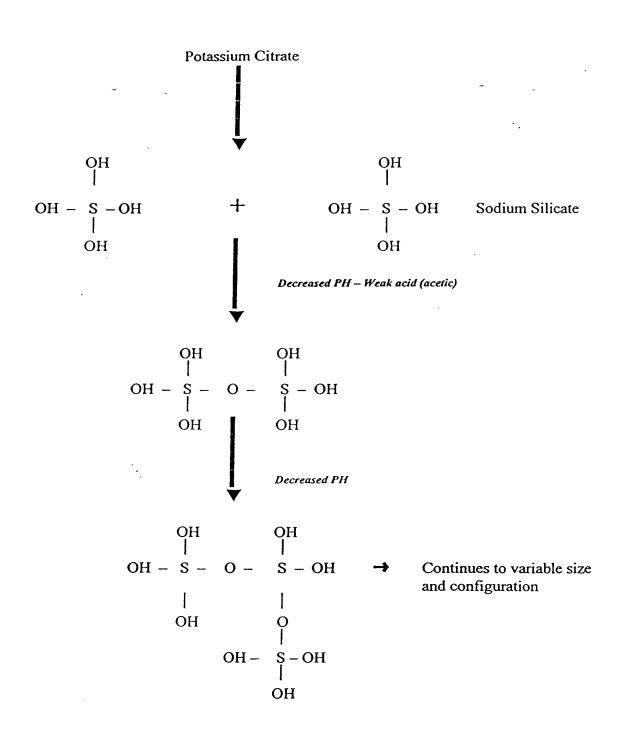
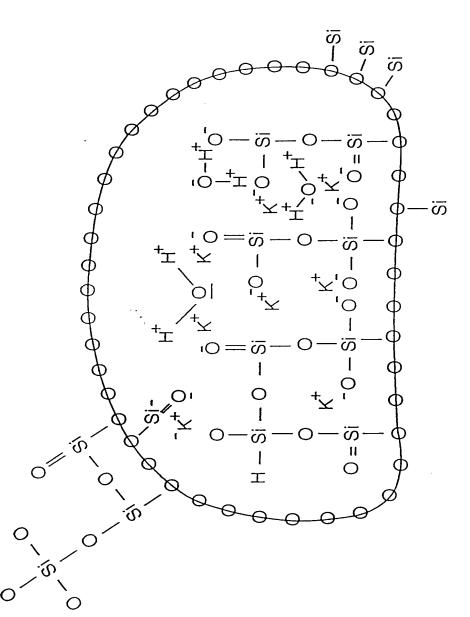


Fig. 2



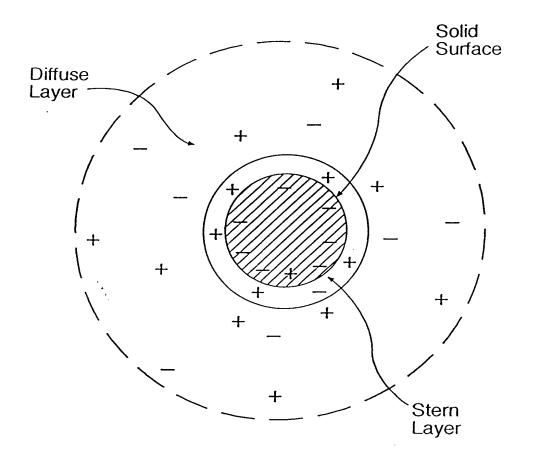


FIG. 4

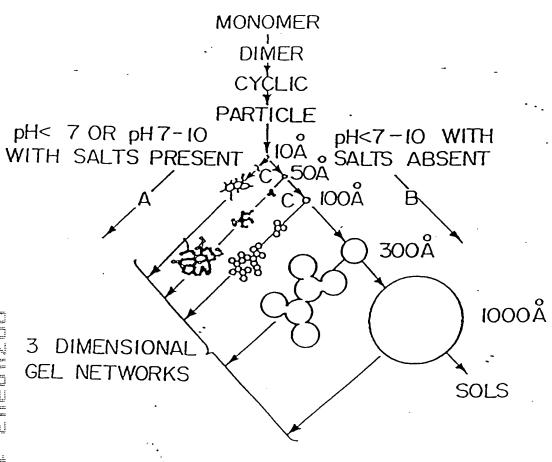


FIG. 5

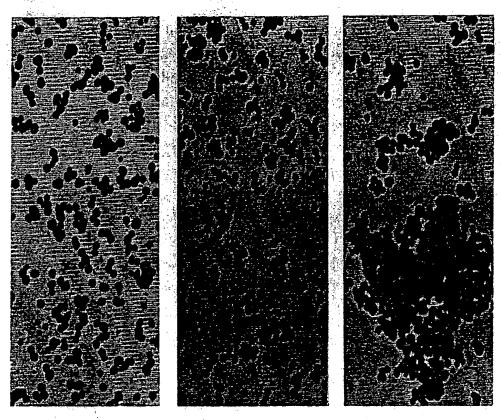
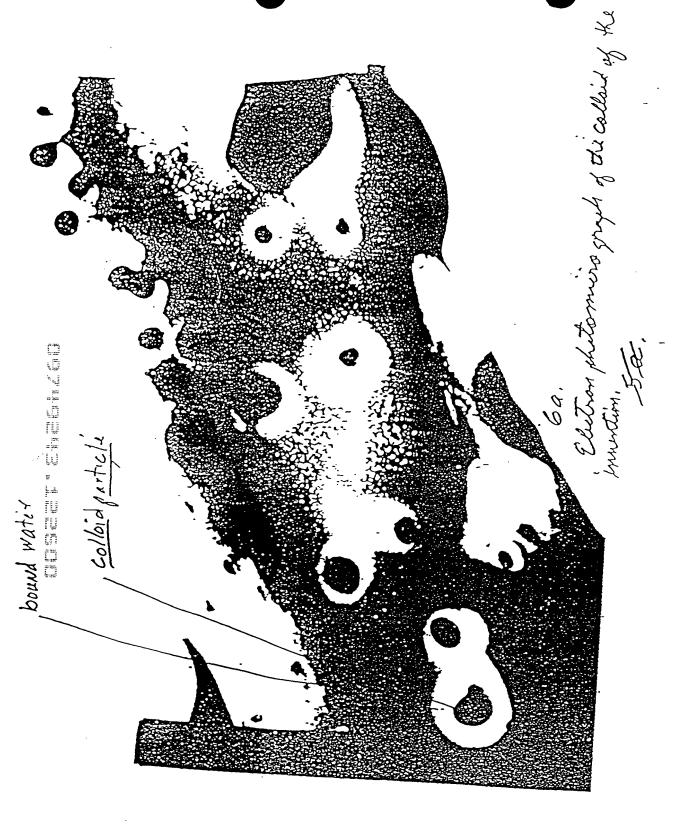


Fig. 26.—Electron micrographs showing stages of aggregation of 35 millimicron silica particles: *left*, colloidal aggregates; *center*, aggregates approaching colloidal size; *right*, supercolloidal aggregates or precipitate.

FIG. 6



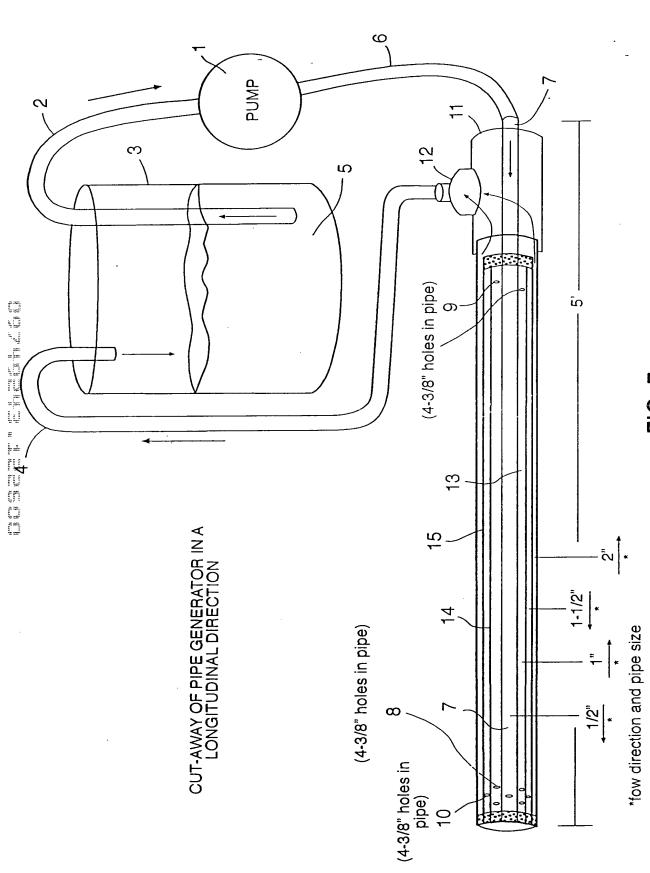
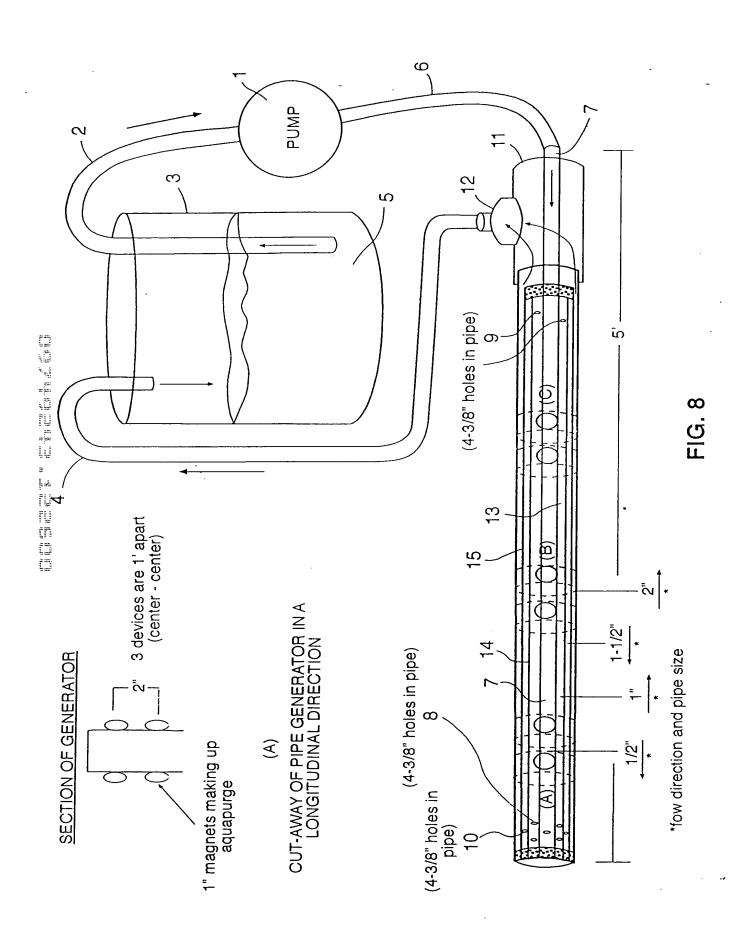
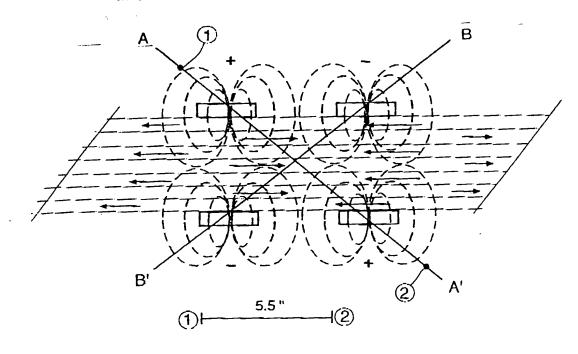


FIG. 7



Cross sectional view of counter current generator of the invention with lines A-A' and B-B' noted for measurement purposes.



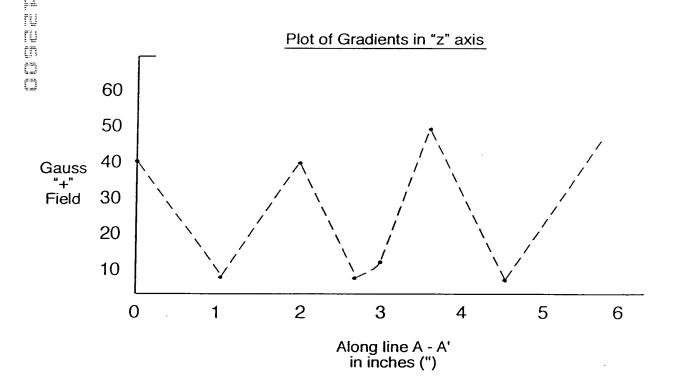


FIG. 9

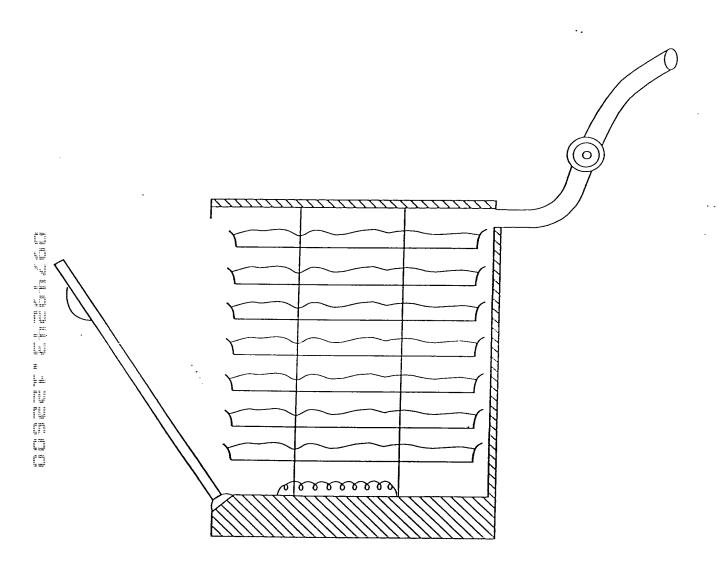


FIG. 10

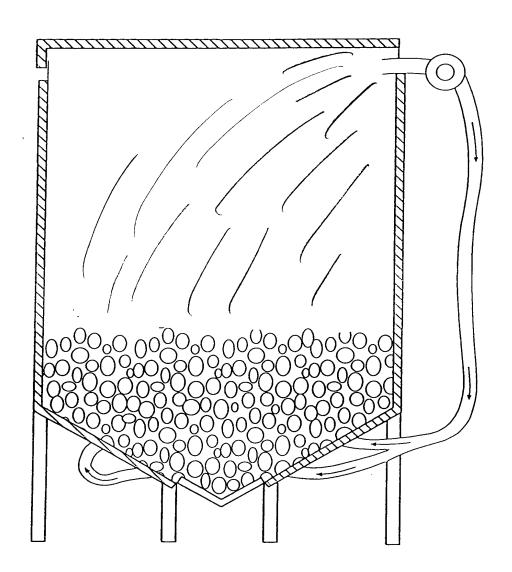


FIG. 11

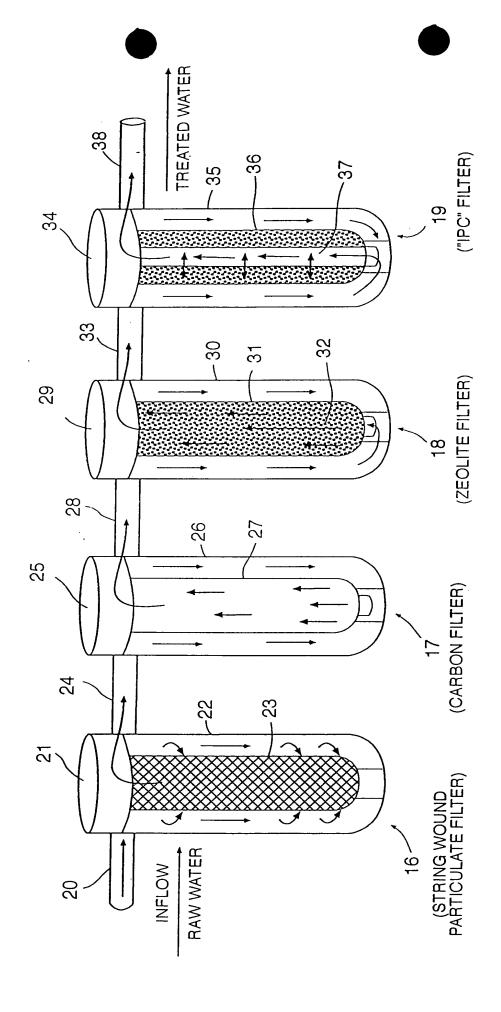


FIG. 12

6 (COLLECTOR/DISTRIBUTOR) 4 (CATION EXCHANGE RESIN) -3 (SOFTENER TANK) (RISER TUBE) വ (CONTROL VALVE MECHANISM) 2 – (IPC LINE) (IPC RESERVOIR) HOME WATER SOFTENER, WITH AUTOMATIC CONTROLLER FOR REGENERATION AND SERVICE IPC CONVERSON ω 1 (IPC FLOAT WELL) 9-(IPC STORAGE TANK) 11 (IPC BUNDLE SUPPLY)

FIG. 14

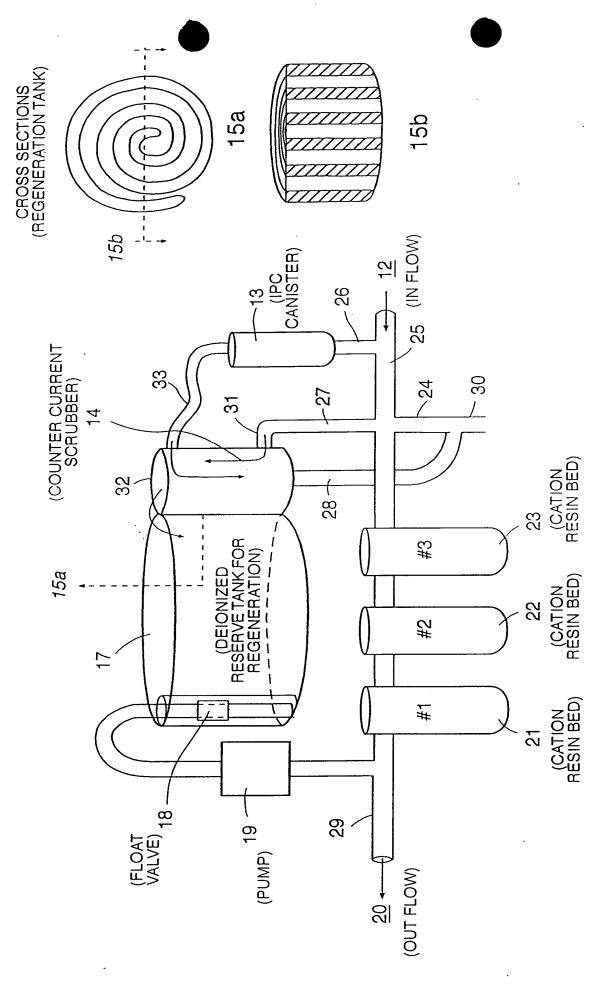


FIG. 15

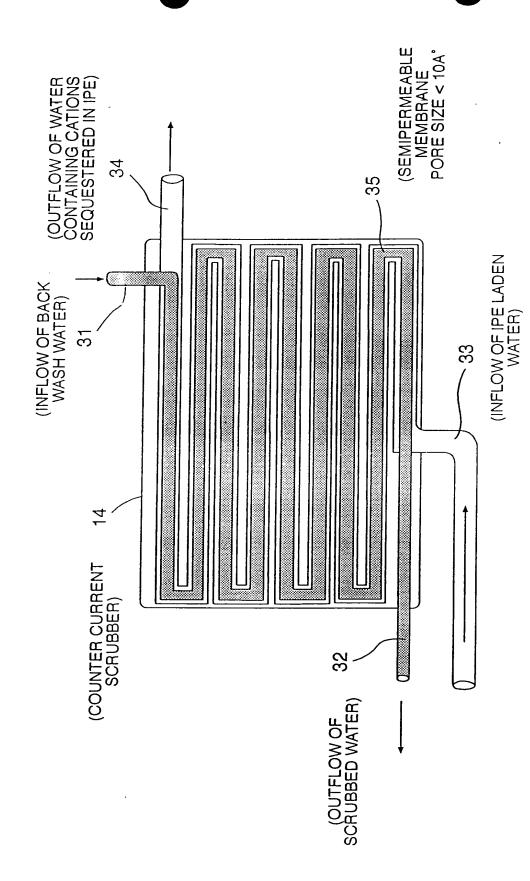


FIG. 16

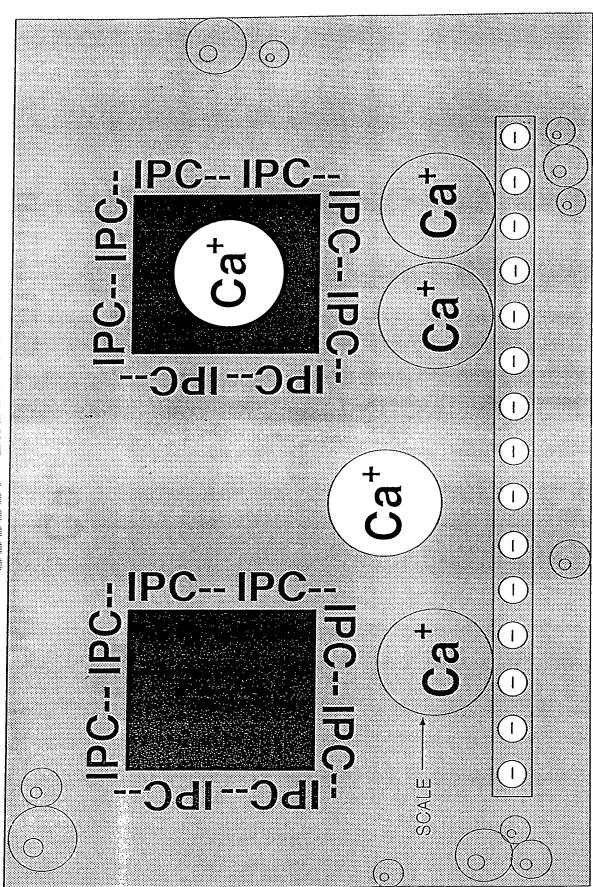


FIG. 17

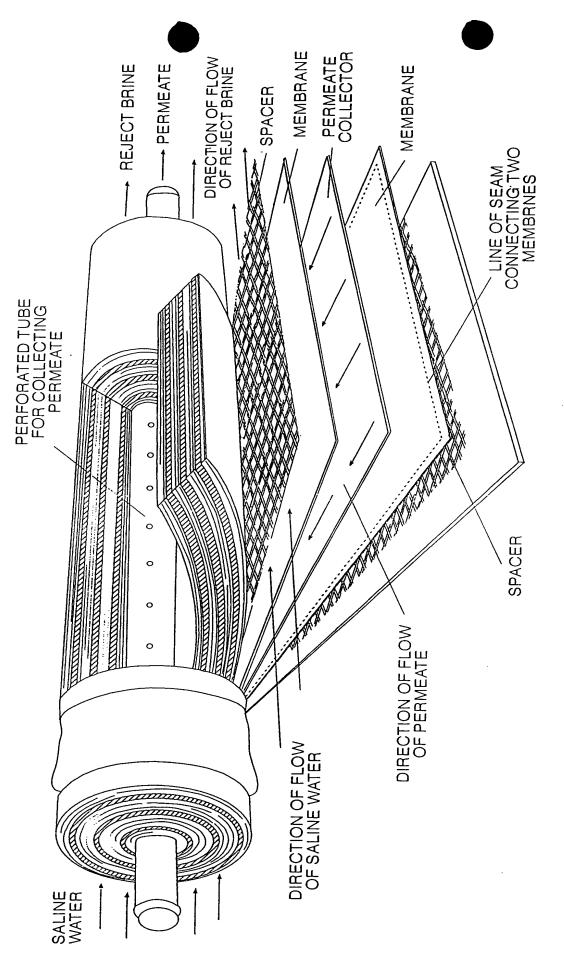


FIG. 18

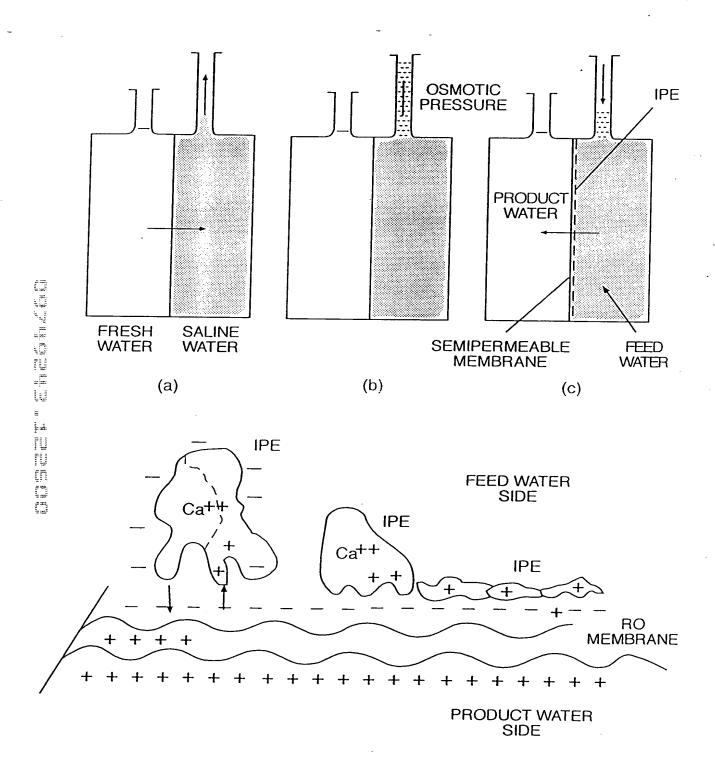


FIG. 19